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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,279	11/19/2003	Steven J. Koester	YOR920030533US1 (17110)	7401
23389 7590 09/26/2007 SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530				
EXAMINER				
MAL ANH D				
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2814				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/717,279

**Applicant(s)**

KOESTER, STEVEN J.

**Examiner**

Anh D. Mai

**Art Unit**

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 July 2007.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-21 is/are pending in the application.  
4a) Of the above claim(s) 10-21 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,2 and 4-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 13, 2007 has been entered.

### *Status of the Claims*

2. The Amendment filed June 13, 2007 is acknowledged. Claim 1 has been amended. Non-elected invention, claims 10-21 have been withdrawn. Claims 1, 2 and 4-21 are pending.

### *Claim Objections*

3. Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 9 recites the *neutral-type* impurity be **C**, **Sn** or **Pb**, while the neutral-type impurity as recited in claim 1, the independent claim, only comprises: **Sn** or **Pb**.

Therefore, claim 9 fails to further limit claim 1, which it depends on.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 7 recites the broad recitation "blocking impurity is C, **Sn** or **Pb**", and the claim also recites "the semiconductor field-effect transistor device as claimed in claim 1" (blocking impurity dopant materials selected from the group comprising In, Pb, **Sb** and **Sn**) is which is the narrower statement of the range/limitation.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiang (U.S. Patent No. 6,749,527) in view of Noda et al. (U.S. Patent No. 6,432,802) all of record.

With respect to claim 1, Xiang teaches a semiconductor field-effect transistor device substantially as claimed including:

a first strained layer (42) of semiconductor material doped of a first dopant type formed on a substrate (40);

a source region and a drain region (64) implanted with dopants of a second opposite type; a gate electrode (54) separated from the first layer (42) by a dielectric region (56), and positioned between the source and drain regions (64);

substrate (40) having one or more threading dislocations, misfit dislocations or crystal defects that extends continuously from the source region to the drain region (64) at the interface between the first strained layer (42) of semiconductor material and substrate (40), and

blocking impurity dopant materials that partially or fully occupies each one or more threading dislocations, misfit dislocation or crystal defects, wherein the blocking impurity dopant materials substantially inhibit diffusion of the implanted source and drain dopants from

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diffusing along the threading dislocations, misfit dislocations or crystal defect (185). (See Fig. 3i).

The blocking impurity dopant materials of Xiang comprises carbon, a neutral-type impurity and device of Xiang further includes halo regions to suppress short channel punchthrough.

Thus, Xiang is shown to teach all the features of the claim with the exception of explicitly utilizing In, Pb, Sb and Sn for the blocking impurity dopant materials.

However, Noda teaches that it is well known in the art to form the halo region to block the encroachment of the source and drain dopants into the channel region utilizing indium (In) and antimony (Sb).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to form the halo blocking region of Xiang utilizing In or Sb blocking impurity as taught by Noda to prevent diffusion of the source/drain dopants into the channel region.

Regarding the threading dislocations, misfit dislocation or crystal defects, the dislocations or defects are inherent of the formation of strain layer on a substrate. (See AAPA).

With respect to claim 2, the first strained layer (42) of semiconductor material of Xiang comprises material selected from the group comprising Si.

With respect to claim 4, the semiconductor substrate (40) of Xiang includes a SiGe relaxed substrate.

With respect to claim 5 and 6, the device of Xiang includes NMOS and PMOS, where P, As or Sb singly or in combination are well known dopants for NMOS and B or In singly or in combination are well known dopants for PMOS. In view of Noda, blocking impurity of In or Sb are used for NMOS and PMOS, respectively, to prevent diffusion of the source/drain dopants into the channel region.

With respect to claim 7, the blocking impurity of Xiang is a neutral-type impurity.

With respect to claim 8, the blocking impurity of Xiang is a group IV impurity.

With respect to claim 9, the blocking impurity of Xiang is C.

### ***Response to Arguments***

7. Applicant's arguments with respect to amended claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (571) 272-1710. The examiner can normally be reached on 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anh D. Mai/  
Primary Examiner, Art Unit 2814